

Armed Forces Pest Management Board Information Paper

Safety of Permethrin Treated Uniforms

Permethrin treated uniforms are safe to wear and effective against biting insects.

The use of permethrin as a clothing treatment to protect individuals from insect bites has been approved by the U.S. Environmental Protection Agency (EPA) for at least 13 years, and permethrin's use for other purposes has been approved since 1973. Permethrin has a very low level of toxicity to humans and mammals. In addition, the EPA does not register a product unless it reviews extensive safety data to ensure it will not cause harm to people who use it. The recommended uses of permethrin for treatment of clothing provide a wide safety margin that ensures personnel are protected from insect bites, but not harmed by the treatment.

The current clothing treatments available within the DoD have been approved for use by the EPA for about 12 years. In addition to the initial safety tests done for the Army's EPA-approved uniform treatments, the Army Surgeon General requested the National Academy of Sciences Committee on Toxicology (COT) to conduct an independent review of the use of permethrin in uniforms. The COT's 1994 report concluded that personnel who wear permethrin treated uniforms are unlikely to experience adverse health effects. The COT also noted the larger likelihood that use of permethrin would reduce the incidence insect-borne disease in personnel.

In 1999-2000, the U.S. Army Soldier and Biological Chemical Command conducted a 10 month soldier acceptance test with infantry soldiers at Fort Polk, LA. The test involved soldiers wearing permethrin treated uniforms to see if they were effective and acceptable to them. The study showed that the uniforms worked (soldiers were bitten less when wearing treated uniforms) and that they are safe. Although a few soldiers noted mild rashes, these occurred primarily in cases where soldiers did not wash the newly treated uniforms at least once before using them. It is important to note that the uniforms used were not old uniforms but brand new ones. Even untreated new uniforms can cause skin irritation if not washed once prior to being worn. A final important point is that Fort Polk has poison ivy and poison oak, so reports of skin rashes are not unexpected at that training post.

The Army has approved the factory treatment of desert Battle Dress Uniforms (BDUs) with permethrin and is currently moving to approve the factory treatment of woodland pattern BDUs. However, no uniforms of any pattern (excepted test articles) have been treated at the factory and distributed to date. When factory treated uniforms are fielded, they will be an OPTIONAL item and will NOT be force issued to personnel. They will be available for use on deployments through the Defense Logistics Agency (DLA) supply system and may also be available for purchase in military clothing sales stores. Finally, any uniform treated at the factory will have a unique label stating that it has been so treated.

Permethrin is safe when used in accordance with label instructions. It is not intended to be used directly on the skin. Once a uniform has been treated with permethrin and has fully dried, the permethrin is strongly bound to the fabric and is difficult to wash out. Personnel wearing a uniform in rain, when fording streams, etc. are therefore not at risk of having permethrin rinse out of the uniform or expose them to higher levels of permethrin and will still be protected when the uniform is again dry.

The bottom line is that permethrin uniform treatments are safe and effective against biting insects. The commercial sector sells permethrin clothing treatment products and treated civilian clothing items are available for purchase from commercial firms (e.g., for hunting).

Another Armed Forces Pest Management Board (AFPMB) information paper that discusses personal protective measures is entitled *Protect Yourself Against Biting Insects*. It is available from the AFPMB web site at <http://www.acq.osd.mil/afpmb/coweb/guidance.htm>